

IN THE CLAIMS:

1. (currently amended) ~~An Ethernet Optical Area Network (“EOAN”), comprising:~~
~~a fiber optic ring;~~
~~a plurality of user facilities coupled to the fiber optic ring, wherein each of the user facilities is coupled to the fiber optic ring via an optical switch operating in accordance with an Ethernet protocol and an Ethernet switch, wherein one or more of the user facilities is coupled to the Ethernet switch via a microwave or free space optic transmission system;~~
~~a router-less network operation center (“NOC”) coupling data to and from the fiber optic ring, wherein the NOC is coupled to the fiber optic ring via an optical switch operating in accordance with an Ethernet protocol and an Ethernet switch, wherein the NOC includes a network management application for managing the EOAN by managing the optical switches and the Ethernet switches coupling the user facilities and the NOC to the fiber optic ring;~~
~~wherein end-to-end Ethernet data communications are provided between various user facilities coupled to the fiber optic ring including one or more user facilities coupled via a microwave or free space optic transmission system using an Ethernet protocol.~~

An Ethernet Optical Area Network (“EOAN”) extending over one or more metropolitan areas, comprising:

a fiber optic ring;
at least a first user facility coupled to the fiber optic ring, wherein the first user facility is coupled to the fiber optic ring via first and second Ethernet switches, first and second wireless transceivers and a first optical multiplexer, wherein the first user facility is connected to the first Ethernet switch, the first Ethernet switch is connected to the first wireless transceiver, the first wireless transceiver communicates signals wirelessly to the second wireless transceiver, the second wireless transceiver is connected to the second Ethernet switch, the second Ethernet switch is connected to the first optical multiplexer, and the first optical multiplexer is connected to the fiber optic ring;

at least a second user facility coupled to the fiber optic ring, wherein the second user facility is coupled to the fiber optic ring via third and fourth Ethernet switches, third and fourth wireless transceivers and a second optical multiplexer, wherein the second user facility is

connected to the third Ethernet switch, the third Ethernet switch is connected to the third wireless transceiver, the third wireless transceiver communicates signals wirelessly to the fourth wireless transceiver, the fourth wireless transceiver is connected to the fourth Ethernet switch, and the fourth Ethernet switch is connected to the second optical multiplexer, and the second optical multiplexer is connected to the fiber optic ring;

a network operation center ("NOC") coupling network management control information to and from the fiber optic ring, wherein the NOC is coupled to the fiber optic ring via a third optical multiplexer and a fifth Ethernet switch, wherein a server is connected to the fifth Ethernet switch, the first Ethernet switch is connected to the third optical multiplexer, and the third optical multiplexer is connected to the fiber optic ring;

wherein the NOC includes a network management application running on the server for remotely managing the EOAN by providing network management control information to the first, second, third, fourth and fifth Ethernet switches, wherein data is communicated between the first and second user facilities via a communication path directed by the first, second, third, fourth and fifth Ethernet switches based on the provided network management control information, wherein end-to-end Ethernet data communications are provided between the first and second facilities using an Ethernet protocol.

2. (currently amended) The EOAN of claim 1, wherein the NOC sends network management commands to the ~~optical switches and Ethernet switches coupling the user facilities and the NOC to the fiber optic ring.~~

3. (originally presented) The EOAN of claim 2, wherein the network management commands comprise SNMP commands.

4. (originally presented) The EOAN of claim 2, wherein the network management commands allocate bandwidth between types of data communications over the fiber optic ring.

5. (originally presented) The EOAN of claim 4, wherein voice communications are given a higher priority for data transmission over the fiber optic ring as compared to computer data communications.

6. (originally presented) The EOAN of claim 5, wherein a predetermined level of Quality of Service (QoS) is provided for voice communications over the fiber optic ring.

7. (originally presented) The EOAN of claim 1, wherein data is transmitted through the fiber optic ring using a plurality of wavelengths of light, wherein each wavelength provides a channel for data transmission via the fiber optic ring.

8. (originally presented) The EOAN of claim 7, wherein the fiber optic ring comprises a wavelength division multiplexing (WDM) or dense wavelength division multiplexing (DWDM) fiber optic ring.

9. (originally presented) The EOAN of claim 8, wherein data communications for a plurality of users is provided at least in part by assigning one or more of the channels for data transmission to one or more particular users.

10. (originally presented) The EOAN of claim 9, wherein at least a first user is assigned a predetermined channel of the plurality of channels, wherein data communications for the first user are transmitted over the fiber optic ring using the predetermined channel.

11. (originally presented) The EOAN of claim 10, wherein data communications for only the first user are transmitted over the fiber optic ring using the predetermined channel.

12. (originally presented) The EOAN of claim 10, wherein at least a second user is not assigned to any single predetermined channel of the plurality of channels.

13. (originally presented) The EOAN of claim 12, wherein data communications for the second user are segregated from other users via frame tags.

14. (currently amended) The EOAN of claim 1, wherein data communications from a the first user facility to a the second user facility are routed to the NOC via the fiber optic ring and subsequently routed to the second user facility from the NOC via the fiber optic ring.

15. (currently amended) The EOAN of claim 1, wherein voice data communications are transmitted via the fiber optic ring, wherein a particular voice data communication is transmitted from a the first user facility to the NOC via an Ethernet protocol, wherein the NOC processes the particular voice data communication in accordance with a telecommunications protocol, wherein the NOC transmits the particular voice data communication to a telephone company central office, wherein the telephone company central office connects the particular voice data communication to a remote user facility.

16. (originally presented) The EOAN of claim 15, wherein the NOC transmits the particular voice data communication to the telephone company central office via a communication facility separate from the fiber optic ring.

17. (originally presented) The EOAN of claim 15, wherein the NOC transmits the particular voice data communication to the telephone company central office via the fiber optic ring.

18. (originally presented) The EOAN of claim 17, wherein data is transmitted through the fiber optic ring using a plurality of wavelengths of light, wherein each wavelength provides a channel for data transmission via the fiber optic ring, wherein one or more predetermined channels for data transmission are dedicated for communications with the telephone company central office via the fiber optic ring.

19. (originally presented) The EOAN of claim 18, wherein at least a first channel for data transmission via the fiber optic ring is dedicated for communications with the telephone company central office via a telecommunications protocol, wherein at least a second channel for data transmission via the fiber optic ring is dedicated for communications between user facilities or other facilities coupled to the fiber optic ring via an Ethernet protocol.

20. (originally presented) The EOAN of claim 1, wherein the EOAN comprises a plurality of fiber optic rings that are interconnected.

21. (originally presented) The EOAN of claim 20, wherein at least a first fiber optic ring is interconnected with a second fiber optic ring, wherein the first fiber optic ring is coupled to user facilities and other facilities in a first municipality, and wherein the second fiber optic ring is coupled to user facilities and other facilities in a second municipality.

22. (originally presented) The EOAN of claim 21, wherein a NOC coupled to the first fiber optic ring controls routing of data communications via the first and second fiber optic rings.

23. (originally presented) The EOAN of claim 21, wherein data communications occur within and between the first and second municipalities in accordance with an Ethernet protocol.

24. (originally presented) The EOAN of claim 20, wherein the first fiber optic ring is interconnected with the second fiber optic ring via a common NOC, a long-haul fiber connection, a microwave-based connection, or a free space optic connection.

25. (currently amended) The EOAN of claim 1, wherein a the first user transmits data to the fiber optic ring at least in part using a free space optic data transmission, wherein a the second user transmits data to the fiber optic ring at least in part using a microwave data transmission, wherein a third user transmits data to the fiber optic ring at least in part using a fiber optic data transmission but not a free space optic data transmission or a microwave data transmission.

26. (originally presented) The EOAN of claim 25, wherein the first user, second user and third user are geographically remote from each other, wherein data communications from and among the first user, second user and third user are in accordance with an Ethernet protocol.

27. (originally presented) The EOAN of claim 1, wherein the fiber optic ring comprises one or more pairs of fiber optics, wherein a first fiber of at least one pair of fibers transmits data in both directions around the fiber optic ring, wherein a second fiber of the at least one pair of fibers transmits in both directions around the fiber optic ring opposite the first direction.

28. (originally presented) The EOAN of claim 27, wherein data transmissions may occur via the first direction or the second direction, wherein a redundant path for data transmissions via the fiber optic ring is provided.

29. (originally presented) The EOAN of claim 27, wherein the fiber optic ring comprises a self-healing fiber optic ring.

30. (currently amended) The EOAN of claim 1, wherein the EOAN comprises a first and second NOC NOCs, wherein the second NOC is a redundant NOC and manages the EOAN by managing the ~~optical switches and the~~ Ethernet switches if the ~~first~~ NOC is unavailable.

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